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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) An information compression apparatus which compresses information and uses a DCT frequency conversion algorithm, comprising:

a plurality of block registers which store block-based multi-bit quantized data converted from information output from a quantization execution module;

a correction level register which presets a correction level indicating a number of data corrections and/or modifications;

a first control mechanism which controls operations of said apparatus so as to consider the plurality of block registers in a scan order and search each block, according to said scan order, for a valid coefficient; and

a data correction mechanism configured to modify the valid coefficient, found in the search, to an invalid coefficient until a number of the valid coefficients modified to invalid coefficients reaches the correction level preset in the correction level register,

wherein the said data correction mechanism moves an isolated valid coefficient that is at a first address not adjacent to another valid coefficient containing address, to a second address that is adjacent to said another valid coefficient containing address, when modifying the valid coefficient to the invalid coefficient based on the correction level causes information deterioration to an extent exceeding a predetermined limit.

2. (previously presented) The information compression apparatus as defined in claim 1,

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wherein the valid coefficient is a coefficient having any coding amount except zero.

3. (previously presented) The information compression apparatus as defined in claim 1, wherein said scan order in the operations includes an inverse zigzag operation.

4. (previously presented) The information compression apparatus as defined in claim 1, further comprising a second control device configured to receive the multi-bit quantized data output from the quantized execution module before the multi-bit quantized data is transmitted to the plurality of block registers, and after said second control device receives the multi-bit quantized data, cause the first control mechanism to start the search operation.

Claim 5 (canceled).

6. (currently amended) ~~[[The]]~~ An information compression apparatus ~~as defined in claim 1, further~~ which compresses information and uses a DCT frequency conversion algorithm, comprising:

a plurality of block registers which store block-based multi-bit quantized data converted from information output from a quantization execution module;

a correction level register which presets a correction level indicating a number of data corrections and/or modifications;

a first control mechanism which controls operations of said apparatus so as to consider the plurality of block registers in a scan order and search each block, according to said scan order, for a valid coefficient; and

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a data correction mechanism configured to modify the valid coefficient, found in the search, to an invalid coefficient until a number of the valid coefficients modified to invalid coefficients reaches the correction level preset in the correction level register; and

a block register net configured to perform a logical OR to the coefficients in the block registers connected thereto such that 1 is output when any one of the block registers connected thereto has a valid coefficient, and the first control mechanism cancels remaining operations to consider the block registers in the scan order.

7. (currently amended) The information compression apparatus as defined in claim 6, wherein said apparatus comprises a plurality of said block register ~~[[net]]~~ nets and ~~[[a]]~~ the number of ~~[[the]]~~ block register nets is equal to ~~[[a]]~~ the number of frequencies used by the DCT frequency conversion algorithm.

8. (previously presented) The information compression apparatus as defined in claim 7, wherein when a quantization table for quantizing the plurality of block coefficients stored in registers is relatively large, plural block register nets for a high frequency side are connected to each other and a logical OR is performed for the plural block register nets.

9. (previously presented) The information compression apparatus as defined in claim 1, wherein the apparatus uses a Huffman coding method.

10. (previously presented) The information compression apparatus as defined in claim 1, wherein the apparatus uses a JPEG coding method.

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11. (previously presented) The information compression apparatus as defined in claim 1, wherein the apparatus uses a sound data coding method.

12. (currently amended) An information compression apparatus which compresses information and uses a DCT frequency conversion algorithm, comprising:

a plurality of block register means for storing block-based multi-bit quantized data converted from the information output from a quantization execution module means;

a correction level register means for presetting a correction level indicating a number of data corrections and/or modifications;

a first control means for controlling operations of said apparatus so as to consider the plurality of block register means in a scan order and search each block, according to said scan order, for a valid coefficient; and

a data correction means for modifying the valid coefficient, found in the search, to an invalid coefficient until a number of the valid coefficients modified to invalid coefficients reaches the correction level preset in the correction level register means,

wherein the data correction means moves an isolated valid coefficient that is at a first address not adjacent to another valid coefficient containing address, to a second address that is adjacent to said another valid coefficient containing address, when modifying the valid coefficient to the invalid coefficient based on the correction level causes information deterioration to an extent exceeding a predetermined limit.

13. (previously presented) The information compression apparatus as defined in claim

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12, wherein the valid coefficient is a coefficient having any coding amount except 0.

14. (previously presented) The information compression apparatus as defined in claim 12, wherein said scan order in the operations includes an inverse zigzag operation.

15. (previously presented) The information compression apparatus as defined in claim 12, further comprising a second control means for receiving the multi-bit quantized data output from the quantized execution module means before the multi-bit quantized data is transmitted to the plurality of block register means, and after said second control device receives the multi-bit quantized data, causing the first control means to start the search operation.

Claim 16 (canceled).

17. (currently amended) ~~[[The]]~~ An information compression apparatus as defined in claim 12, further which compresses information and uses a DCT frequency conversion algorithm, comprising:

a plurality of block register means for storing block-based multi-bit quantized data converted from the information output from a quantization execution module means;

a correction level register means for presetting a correction level indicating a number of data corrections and/or modifications;

a first control means for controlling operations of said apparatus so as to consider the plurality of block register means in a scan order and search each block, according to said scan order, for a valid coefficient;

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a data correction means for modifying the valid coefficient, found in the search, to an invalid coefficient until a number of the valid coefficients modified to invalid coefficients reaches the correction level preset in the correction level register means; and

a block register net means for performing a logical OR to the coefficients in the block registers connected thereto such that 1 is output when any one of the block register means connected thereto has a valid coefficient, and wherein the first control means cancels remaining operations to consider the block registers in the scan order.

18. (currently amended) The information compression apparatus as defined in claim 17, wherein said apparatus comprises a plurality of said block register net means, and [[a]] the number of [[the]] block register [[nets]] net means is equal to [[a]] the number of frequencies used by the DCT frequency conversion algorithm.

19. (previously presented) The information compression apparatus as defined in claim 17, wherein when a quantization table for quantizing the plurality of block coefficients stored in register means is relatively large, the plural block register net means for a high frequency side are connected to each other and a logical OR is performed for the plural block register net means.

20. (previously presented) The information compression apparatus as defined in claim 12, wherein the apparatus uses a Huffman coding method.

21. (previously presented) The information compression apparatus as defined in claim 12, wherein the apparatus uses a JPEG coding method.

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22. (previously presented) The information compression apparatus as defined in claim 12, wherein the apparatus uses a sound data coding method.

23. (currently amended) An information compression method for compressing information and using a DCT frequency conversion algorithm, comprising the steps of:

(a) presetting a predetermined correction level indicating a number of data corrections and/or modifications;

(b) latching quantized data including valid coefficients and invalid coefficients into a block register;

(c) performing a search in an inverse zigzag scan order of said quantized data latched in said block register in step (b) to find one or more valid coefficients;

(d) modifying a valid coefficient found in step (c), to an invalid coefficient;

(e) counting a number of said valid coefficients modified to invalid coefficients in step (d);

(f) searching for and finding another valid coefficient, and modifying said another valid coefficient to the invalid coefficient;

(g) incrementing by one the number of valid coefficients modified to invalid coefficients counted in step (e);

(h) continuing the inverse zigzag scan to search for additional valid coefficients, when the number of valid coefficients modified to invalid coefficients is smaller than the correction level in step (a); [[and]]

(i) transferring the data of the block register to a coding module when the number of

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valid coefficients modified to invalid coefficients reaches the correction level; and

an address moving step for moving addresses of isolated valid coefficients searched such that the isolated valid coefficients are arranged in corresponding adjacent addresses when the information deterioration exceeds a predetermined limit in steps (d) and (f), and wherein steps (d) and (f) are canceled instead.

24. (previously presented) The information compression method as defined in claim 23, wherein in steps (d) and (f), valid coefficients smaller than a predetermined threshold value are modified to an invalid coefficient.

25. (previously presented) The information compression method as defined in claim 23, further comprising a prescarching step for searching the quantized data before step (c).

Claim 26 (canceled).

27. (currently amended) ~~[[The]]~~ An information compression method ~~as defined in claim 23~~ for compressing information and using a DCT frequency conversion algorithm, further comprising the steps of:

(a) presetting a predetermined correction level indicating a number of data corrections and/or modifications;

(b) latching quantized data including valid coefficients and invalid coefficients into a block register;

(c) performing a search in an inverse zigzag scan order of said quantized data latched

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in said block register in step (b) to find one or more valid coefficients;

(d) modifying a valid coefficient found in step (c), to an invalid coefficient;

(e) counting a number of said valid coefficients modified to invalid coefficients in step

(d);

(f) searching for and finding another valid coefficient, and modifying said another valid coefficient to the invalid coefficient;

(g) incrementing by one the number of valid coefficients modified to invalid coefficients counted in step (e);

(h) continuing the inverse zigzag scan to search for additional valid coefficients, when the number of valid coefficients modified to invalid coefficients is smaller than the correction level in step (a);

(i) transferring the data of the block register to a coding module when the number of valid coefficients modified to invalid coefficients reaches the correction level; and

a calculating step for calculating a total sum of coefficients of block registers arranged along each scanning line corresponding to one of different frequencies used in the DCT frequency conversion algorithm.

28. (previously presented) The information compression method as defined in claim 27, further comprising a summing up step for summing up a plurality of the total sums calculated by said calculating step.

29. (currently amended) A computer-readable medium tangibly embodying a program causing a computer to execute an information compression operation using a DCT frequency

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conversion algorithm according to a method comprising the steps of:

- (a) presetting a predetermined correction level indicating a number of data corrections and/or modifications;
- (b) latching quantized data including valid coefficients and invalid coefficients into a block register;
- (c) performing a search in an inverse zigzag scan order of said quantized data latched in said block register in step (b) to find one or more valid coefficients;
- (d) modifying a valid coefficient found in step (c), to an invalid coefficient;
- (e) counting a number of said valid coefficients modified to invalid coefficients in step (d);
- (f) searching for and finding another valid coefficient, and modifying said another valid coefficient to the invalid coefficient;
- (g) incrementing by one the number of valid coefficients modified to invalid coefficients counted in step (e);
- (h) continuing the inverse zigzag scan to search for additional valid coefficients, when the number of valid coefficients modified to invalid coefficients is smaller than the correction level in step (a); [[and]]
- (i) transferring the data of the block register to a coding module when the number of valid coefficients modified to invalid coefficients reaches the correction level; and
an address moving step for moving addresses of isolated valid coefficients searched such that the isolated valid coefficients are arranged in corresponding adjacent addresses when the information deterioration to an extent exceeds a predetermined limit in the modifying steps, and wherein steps (d) and (f) are canceled instead.

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30. (previously presented) The computer-readable medium tangibly embodying the program as defined in claim 29, wherein in steps (d) and (f), valid coefficients smaller than a predetermined threshold value are modified to an invalid coefficient.

31. (previously presented) The computer-readable medium tangibly embodying the program as defined in claim 29, further comprising a presearching step for searching the quantized data in step (c).

Claim 32 (canceled).

33. (currently amended) ~~[[The]]~~ A computer-readable medium tangibly embodying ~~[[the]]~~ a program as defined in claim 29, further causing a computer to execute an information compression operation using a DCT frequency conversion algorithm according to a method comprising the steps of:

(a) presctting a predetermined correction level indicating a number of data corrections and/or modifications;

(b) latching quantized data including valid coefficients and invalid coefficients into a block register;

(c) performing a search in an inverse zigzag scan order of said quantized data latched in said block register in step (b) to find one or more valid coefficients;

(d) modifying a valid coefficient found in step (c), to an invalid coefficient;

(e) counting a number of said valid coefficients modified to invalid coefficients in step

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(d):

(f) searching for and finding another valid coefficient, and modifying said another valid coefficient to the invalid coefficient;

(g) incrementing by one the number of valid coefficients modified to invalid coefficients counted in step (e);

(h) continuing the inverse zigzag scan to search for additional valid coefficients, when the number of valid coefficients modified to invalid coefficients is smaller than the correction level in step (a);

(i) transferring the data of the block register to a coding module when the number of valid coefficients modified to invalid coefficients reaches the correction level; and

a calculating step for calculating a total sum of coefficients of block registers arranged along each scanning line corresponding to one of different frequencies used in the DCT frequency conversion algorithm.

34. (previously presented) The computer-readable medium tangibly embodying the program as defined in claim 33, further comprising a summing up step for summing up a plurality of the total sums calculated by said calculating step to execute code calculation at an appropriate part of the block register.

35. (currently amended) A computer-readable medium tangibly embodying a program causing a computer using a JPEG coding method to execute an information compression operation according to a method comprising the steps of:

(a) presetting a predetermined correction level indicating a number of data corrections

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and/or modifications;

(b) latching quantized data including valid coefficients and invalid coefficients into a block register;

(c) performing a search in an inverse zigzag scan order of said quantized data latched in said block register in step (b) to find one or more valid coefficients;

(d) modifying a valid coefficient found in step (c), to an invalid coefficient;

(e) counting a number of said valid coefficients modified to invalid coefficients in step (d);

(f) searching for and finding another valid coefficient, and modifying said another valid coefficient to the invalid coefficient;

(g) incrementing by one the number of valid coefficients modified to invalid coefficients counted in step (e);

(h) continuing the inverse zigzag scan to search for additional valid coefficients, when the number of valid coefficients modified to invalid coefficients is smaller than the correction level in step (a); [[and]]

(i) transferring the data of the block register to a coding module when the number of valid coefficients modified to invalid coefficients reaches the correction level; and

an address moving step for moving addresses of isolated valid coefficients searched such that the isolated valid coefficients are arranged in corresponding adjacent addresses when the information deterioration exceeds a predetermined limit in steps (d) and (f), and wherein steps (d) and (f) are canceled instead.

36. (currently amended) A computer-readable medium tangibly embodying a program

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of an information compression causing a computer using a sound data coding method to execute an information compression operation according to a method comprising the steps of:

(a) presetting a predetermined correction level indicating a number of data corrections and/or modifications;

(b) latching quantized data including valid coefficients and invalid coefficients into a block register;

(c) performing a search in an inverse zigzag scan order of said quantized data latched in said block register in step (b) to find one or more valid coefficients;

(d) modifying a valid coefficient found in step (c), to an invalid coefficient;

(e) counting a number of said valid coefficients modified to invalid coefficients in step (d);

(f) searching for and finding another valid coefficient, and modifying said another valid coefficient to the invalid coefficient;

(g) incrementing by one the number of valid coefficients modified to invalid coefficients counted in step (e);

(h) continuing the inverse zigzag scan to search for additional valid coefficients, when the number of valid coefficients modified to invalid coefficients is smaller than the correction level in step (a); [[and]]

(i) transferring the data of the block register to a coding module when the number of valid coefficients modified to invalid coefficients reaches the correction level; and

an address moving step for moving addresses of isolated valid coefficients searched such that the isolated valid coefficients are arranged in corresponding adjacent addresses when the information deterioration to an extent exceeds a predetermined limit in the modifying steps, and

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wherein steps (d) and (f) are canceled instead.

Claim 37 (canceled).

38. (previously presented) The information compression apparatus as defined in claim 1, wherein said correction level preset by said correction level register corresponds to a setting of a number of permitted data corrections, and valid coefficients in said quantized data stored in said plurality of block registers are modified to invalid coefficients until the number of modifications reaches the correction level preset in the correction level register.